



MEETING MINUTES

HANFORD ADVISORY BOARD (HAB, Board)

River and Plateau Committee (RAP)

November 9, 2022

Hybrid Meeting – In-person and via Microsoft Teams

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This is only a summary of issues and actions discussed at this meeting. It may not represent the fullness of represented ideas or opinions, and it should not be used as a substitute for actual public involvement or public comment on any particular topic unless specifically identified as such.

Opening

Tom Sicilia, Oregon Department of Energy and RAP Chair, welcomed participants and invited the Deputy Designated Federal Officer (DDFO) to officially start the meeting.

Mike Berkenbile, US Department of Energy (DOE) and DDFO, announced that the meeting was being held in accordance with the Federal Advisory Committee Act (FACA).

Ruth Nicholson, HAB Facilitator, welcomed meeting participants and notified the participants that the meeting was being recorded.

Announcements

Tom Sicilia noted that there would typically be a round robin for when new committee members joined. Instead, he planned to set up a “meet and greet” in the committee’s Microsoft Teams channel and he asked those interested to participate.

Tom Sicilia explained that there was a new “RAP Sheet” included in the meeting packet. The RAP Sheet contained documents that the committee could find to be of interest, each available in the Administrative Record.

Meeting Minute Approval

The April RAP meeting minutes were approved without comment.

Groundwater Update – 200-ZP-1 Groundwater Operable Unit Optimization Study

Kate Amrhein, DOE, provided a presentation covering the 200-ZP-1 Groundwater Operable Unit (OU) Optimization Study, including the remedy selection, challenges encountered, and path forward. She felt that it would serve as a good introduction to the groundwater program for new committee members.

Following a brief overview of the presentation’s purpose, Kate reviewed a map of groundwater plumes. She noted the complexity of managing those plumes and the challenge it represented to Hanford Site cleanup.

She explained that, initially, the 200 Area Pump and Treat Facility was put into place as an interim remedy. Now, the OU was heading toward a final remedy decision. She explained that the facility was capable of treating carbon tetrachloride by means of air stripping and granular activated carbon. She explained air stripping, describing the process as water entered the associated tower and filtered over a device that she compared to a “wiffle ball,” which filtered out the air. That air was then filtered through the granular activated carbon.

For the interim remedy, it was determined that the pump and treat system along with natural attenuation would be effective. The pump and treat system would treat the bulk of the contaminants, while natural attenuation would be effective for what remained after the system’s running duration. She noted that there was some uncertainty around the attenuation rate. Literature at the time suggested a degradation half-life of around 41 years, which was confirmed by a Pacific Northwest National Laboratory (PNNL) study.

Kate reviewed a photo of the 200 Area Pump and Treat Facility, pointing out components such as the air stripping towers and membrane bioreactors.

Following, she reviewed the network map of groundwater extraction and injection wells that were used for groundwater cleanup. She noted that the system was recently expanded, and expansion would continue in the near future.

She showed a graphical comparison of the carbon tetrachloride plume as it changed from 2012 to 2020. The compression that was seen in the graphics indicated that the pump and treat system and wells were pushing contamination toward the center of that plume.

As the remedy progressed, it was examined for progress and effectiveness. As a result, the team learned that there was more carbon tetrachloride present than initially expected during the previous feasibility studies. She reviewed a graphic that showed the depth of the carbon tetrachloride, which accounted for about 25% of the Ringold A total, as shown in the associated graph, rather than 12%. Further characterization was planned to better define the extent of that contamination.

An additional challenge encountered was the discovery that the present carbon tetrachloride, in the conditions of the Hanford Site, had a degradation period of 630 years rather than 41 years as assumed in the feasibility study. As a result, remedy needed to be adjusted for a more thorough cleanup. She noted that the ability to adjust the remedy up-front demonstrated the value of the examination.

Nitrate concentrations were found to have been significantly reduced as a result of pump-and-treat activities, and modelling suggested that it would be completely cleaned up as a result of the remedy. Treatment of nitrate was suspended in order to focus on carbon tetrachloride. This resulted in remedy efficiencies, such as no longer needing to deal with algae buildup that resulted from nitrate treatment. To finalize nitrate cleanup, blending would occur during pump and treat activities, followed by monitored natural attenuation.

Kate explained that part of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) process was continual evaluation of remedies, which was part of the rationale for the optimization study. The present remedy, as designed, was projected to be insufficient for meeting remedial action objectives. Focus was shifting toward treatment of carbon tetrachloride, as that posed the greatest risk to human health. Should it be determined necessary later, nitrate treatment could be restarted. Additional data would be collected going forward with the addition of more monitoring wells. Additional air strippers were planned as well, which were expected to increase flow rates by approximately 1,000 gallons per minute over the present rate.

The optimization study was an iterative process. As new data was collected, DOE would work with the US Environmental Protection Agency (EPA) to determine the best solution going forward. There was no intent to change the cleanup levels for present contaminants.

Regulatory Perspectives

Geoff Schramm, EPA, noted that part of what Kate described was the adaptive management process. He stated that, though the discoveries made during the optimization study presented challenges, it was valuable that those were discovered early. He thought that the process was going well and was happy to see the project moving along as it was.

Nina Menard, Washington State Department of Ecology (Ecology), explained that the groundwater OUs were divided into four units. The OU being discussed was one where EPA was the lead regulatory agency, while Ecology led others, but the two agencies worked together on each. She noted that carbon tetrachloride and uranium were the primary contaminants identified under the interim Record of Decision (ROD), but the team was still evaluating to determine if more contaminants would be included in the final ROD.

Committee Discussion

Tom Galioto, Tri-City Development Council (TRIDEC), asked for details on the source of the groundwater being treated and reinjection of the treated water. Kate explained that water was extracted from a large area, some beneath the facility and some being “pulled” from a few miles away. Once treated, the water was injected back to the far, outside edges of the plume. Water extraction was focused on the center of the plume as the contaminants were being pushed to that point.

Tom Galioto asked how much carbon tetrachloride was removed per pass through the pump and treat facility. Kate stated that concentrations following treatment were well beneath drinking water standards and treatment had a greater than 99% efficacy rate.

Tom Sicilia asked if there were any milestones associated with optimizations. Kate stated that there were not, but the team had its own project goal dates. Tom Sicilia asked about deep wells. Kate explained that there were only a few deep wells installed at that time, but more were planned as part of ongoing optimizations.

Rose Ferri, Yakama Nation, asked about which contaminants were being treated and which were reinjected back into groundwater. Kate explained that only two contaminants were being treated, with nitrate being the only one to be reinjected above the drinking water standard. Everything else, such as technetium-99 and uranium, are removed via ion exchange. She noted that trichloroethylene (TCE) was also being reinjected above the drinking water standard, but there was no means of treating that with the currently available technology, so that was also being monitored for natural attenuation and was expected to degrade quickly. Rose followed up, asking which contaminants were being tracked. Kate stated those included uranium, technetium-99, nitrate, carbon tetrachloride, iodine-129, TCE, and tritium.

Rose asked for detail on the plans for new well installation. Kate explained that new wells were recently installed on the northern edge of the plume. While most new wells would be placed at the highest concentration of the plume, the outer edges were not being ignored, and its movement was being evaluated. Per the presently available data, it was contained.

Chris Sutton, Public at Large, asked if Iodine-129 was below the drinking water standard as a result of dilution. Jim Hanson, DOE, confirmed that it was and that there was no treatment available for that contaminant. Chris noted that, in the ROD, there was a stated 25-year time for treatment of 95% of the carbon tetrachloride. He asked how long that was estimated to take with the presently available data. Kate stated that it was too early in the evaluation to determine that.

Miya Burke, Hanford Challenge, asked about the difference between degradation methods. Kate explained that there were two types of degradation: abiotic, where no action was needed, and biotic, which utilized microorganisms. Biotic options were being evaluated for potential acceleration of treatment.

Rob Davis, City of Pasco, wondered why cesium was not seen in the plume, as shown in the presentation, when that was expected to be leaking from waste tanks. Kate explained that the plume showed what was present in the groundwater. Cesium was not present due to mobility; it was not expected because it would bind to the soil. Other, more mobile tank contaminants were in such low concentrations that they were almost a “non-detect.” From the tanks, the main contaminants of concern in groundwater were uranium and technetium-99. Monitoring was occurring for other contaminants as well, such as cyanide. The program was always evaluating what was being seen in groundwater to get ahead of potential issues. The map shown in the slides focused on the primary constituents of concern. So long as tank waste

components were caught in the soil, there was low risk to groundwater. However, there were a series of wells surrounding the tank farms to ensure those contaminants remained controlled.

Gerry Pollet, member of the public, commented: “TCE does not readily degrade in ground water, so what is meant by statement that you rely on natural attenuation? It is denser than water and concentrates at bottom of aquifers. Are [per- and polyfluoroalkyl substances (PFAS)] even being looked for?” Kate explained that PFAS was a new concern for the Site, and she knew that the relevant group was beginning the process of that evaluation. For TCE, dispersion and blending was being examined, though part of it came out with the carbon tetrachloride treatment.

John Price, Ecology, asked: “you mentioned natural bio-degradation. Have you considered injecting other microbes (like the Dehalococcoides strain used at the DOE Pinellas Plant)?” Kate stated that different methods of cleanup were constantly being evaluated. She was unsure about that method specifically.

Tom Rogers, Washington State Department of Health (WADOH), noted that, from the plume map, there appeared to be a plume that could be from non-Hanford sources. Kate stated that it was comingled with the larger plume and that DOE was working with Ecology to determine the source.

Cumulative Impact Evaluation and Update

Jason Capron, DOE, with the support of Doug Hildebrand, DOE, and Sarah Springer, Central Plateau Cleanup Company (CPCCo), provided a briefing on the Cumulative Impact Evaluation (CIE).

At a high-level, Jason explained, the CIE was a modelling toolset to simulate future contaminant migration from across the Central Plateau. It looked at all the cribs, tanks, and other facilities that had releases. All those releases had to potential to go through the vadose zone and comeingle, from soil down to groundwater. The goal of the CIE was to look at things holistically, determining how plumes and OUs came together, to assist in making decisions.

Jason emphasized that the CIE was not a decision making tool. It was not a standalone entity, but part of a larger framework of tools.

The CIE had an interrelationship with the Cumulative Analysis (CA) in that they both used similar underlying models. However, each did different things: The CA predicted future dose from radionuclide sources for comparison with requirements in DOE Order 435.1, *Radioactive Waste Management*, while the CIE predicted future groundwater concentrations (radionuclides and hazardous chemicals) to support cleanup decision-making.

Jason reviewed the components of the CIE. The Geoframework Model component was a representation of subsurface geologic structures that were developed using borehole data.

The Hanford Site Disposition Baseline compiled the remediation assumptions. The CIE allowed the team to examine various “what-if” scenarios in cleanup, such as how the sequence and timing of cleanup actions would impact each OU.

The Recharge Evolution Tool integrated various data sources to produce estimates of the groundwater recharge rate, taking into account the different types of ground cover, topography, and geology. It looked at what has occurred, what was occurring, and what will probably occur.

The Inventory Facet compiled what contamination was presently in the waste sites and soil. The simulation gave the modelling basis for that inventory.

The Vadose Zone Facet took the individual parts discussed to that point and brought them together into a model. Jason explained that the overarching model had more computational demands, meaning that it

took longer for the computers to run the calculations. As a result, they balanced the data output and computation needs by breaking the region into nodes. The Vadose Zone Facet simulated what would happen within each node.

The Saturated Zone Facet took contaminant transport information from the vadose zone and continued to simulate what would happen in the groundwater. He noted that there were more contaminants simulated in the Saturated Zone Facet than the Vadose Zone Facet due to concentrations present in the vadose zone versus groundwater.

Jason explained that the “no further action” model has been used as a test case. The test went well, and the CIE output contained good results. Parts of the model were being used to look more closely at the West Area and East Area waste sites. He emphasized that the CIE was a living toolset that involved continuous improvements and refinements.

Regulatory Perspectives

Nina Menard stated that DOE and its contractors did an excellent job of involving the regulatory agencies in the process. She noted that, when it started, Ecology submitted several questions and suggestions, each of which were taken to heart during the development. She felt that there was a great relationship between the agency and its modelling contractor.

Craig Cameron, EPA, agreed with Nina, stating there was a good and productive working relationship.

Committee Discussion

John Price asked if the recharge rates were examined based on climate change. Jason stated that the model had the capability to do so, as the sensitivities of the model could be adjusted, but there was not a specific plan based on that.

Tom Sicilia asked if there were any milestones associated with the CIE. Jason stated that there were none tied to the CIE, but the CIE supported other milestones. Tom Sicilia noted that there were a lot of nodes, 24 million per the slide. He asked how long it took to resolve any changes made through the change. Jason stated that it was dependent on when a model was run. When new information was available, it was implemented in all future runs, but not retroactively applied to previous runs. Tom Sicilia asked how long a run took. Doug stated that it could take from a couple of days to weeks to months, followed by quality assurance and control processes, which were longer than the runs themselves.

Gerry Pollet stated that, regardless of model for CA, the key determinants of risk and effect are from use of DOE’s comparison to the DOE Order 435.1 standard instead of risk-based standards that are required to be used for decisions from CERCLA and the Model Toxics Control Act (MTCA). DOE Order 435.1 allowed 100 millirem dose to adults, which equates to a 1% excess cancer risk for adults exposed, while CERCLA only allowed 0.01% that and took into account higher-risk populations, such as Native Americans or children. He asked what EPA and Ecology were doing to ensure that outcomes considered the EPA and MTCA standards following use of tribal exposure scenarios and children, along with cumulative risk, rather than allowing a dose-based standard to inform cleanup decisions.

Craig stated that, while he agreed with Gerry’s point, the point Jason was making in regard to the CA was that some of the underlying modelling tools were the same between the CA and CIE, but the goals and purpose of the tools were entirely different. Nina agreed that the CIE was different, and a circular process was to prove that the information that resulted from the modelling would inform the decisions made under CERCLA.

Jason clarified that the data from the CIE could be used to support regulatory decisions. As an example, the data could be used as part of a feasibility study. However, it has not been used in any regulatory decisions to that point as it was not far enough along in the process. Tom Sicilia noted that the CERCLA process would serve as a double check, and no decision was permanent.

Rob Davis asked if the permeation rate in each of the substrata layers was known. Jason stated that, though there were some questions, there was a good understanding of the transport parameters and overall structure. There were a lot of literature references to the various rates that could be used in modelling, and DOE worked with the regulators to determine which to use. They were seeking to select the best value possible for the most representative model possible.

Rob also noted that he found it confusing that the layers were named differently across the graphs shown in the slides. Jason stated that the team would review that for better clarity and consistency in naming conventions.

Pam Larsen, Benton County, stated that the committee had heard many model presentations in the previous years which were planned to be used for various decisions. She asked how this model would provide different information than previously projected and how it would be integrated into past results. Jason stated that there would not be retroactive actions on past decisions, like the river corridor. He explained that the past models and decisions were more self-contained, while the Central Plateau presented a challenge in that there were several waste sources on top of one another. This model provided the ability to forecast interactions between waste sites, providing a more holistic picture of the CIE. Previously, assumptions would have been needed around such interactions. The CIE was an important tool for a “big picture” perspective.

Chris Sutton asked if there were plans to use the CIE to support the 200-ZP-1 Groundwater Operable Unit Optimization Study. Jason stated that it had the capability, but it might be “overkill” for that purpose. Chris explained that six years prior there was a task force ready to characterize the WA-1 waste site. He asked if the preliminary results from CIE indicated if that would still be necessary. He explained that the CIE was primarily used to gain an understanding of waste sites and their interactions, including where additional characterization was necessary and where to focus characterization efforts for best value.

Shelley Cimon, member of the public, asked how much data was needed for model runs to ensure robustness in the output. Jason stated that the benefit of the model was that the sensitivity could be adjusted and can consider where there were uncertainties. Shelley recalled large areas that were lacking boreholes. She asked what would drive seeking more information. Jason stated that determining where additional data was needed was part of the CERCLA decision making process.

Vince Panesko, member of the public, asked: While we have an understanding of the macro geoframework, what steps were being taken to define ancient lake beds on a micro level where there are several layers within a few feet of depth? He clarified that he was interested in the problem of lateral transfer. Sarah explained that, as the vadose zone nodes were about one kilometer, the CIE was looking at units that were hydraulically significant. On the scale of the CIE, that was the best that could be done. If needing to look at a micro-level scale, that would need to be examined at a site-specific scale. Should additional data be gathered at that scale, it can be incorporated into the CIE. Sarah stated that if he was specifically interested in how to model geographic layers, there were a variety of different approaches for that, which was best determined based on the specific site.

Rose Ferri expressed worry that the data quality could suffer in the event of budget cuts, which could potentially impact future decision making. Jason understood the concern but stated that for the Central

Plateau, model toolsets would be needed for decision making. It was important that data quality was maintained and that was why it would serve as a record as part of those regulatory decisions. The data could be interrogated even after the decision was made.

Rob asked for detail on what happened where there were interactions between plumes. Jason explained that plumes were moving with the groundwater. They were looking at how the groundwater moved and the contaminants within that. If plumes of the same contaminant came together, it would be additive, while plumes of different contaminants could become comingled. Rob clarified that he was trying to better understand concerns he had heard around how plumes might be directed to a certain area. Jason explained that one of benefits of the model was that sensitivities could be adjusted for uncertainty and allowed examination of what might happen under various conditions, well before reaching the decision level. He stated that the model did not address that specifically, but it did show where there were gaps in knowledge and what was needed to reduce those uncertainties.

Chris asked if nodes needed to be equally spaced and homogenous or if they could be condensed or expanded for the element being modelled. Trevor Budger, Intera, explained that they could be adapted based on the level of specificity needed.

Tom Sicilia asked if the CIE was calibrated. Jason stated that it was, based on all data available from 1943 onwards. It would be evaluated for how representative it was going forward through a process of ongoing model maintenance. Tom Sicilia expected that there would be more questions as the CIE started being used in decisions. He hoped to keep the conversations around it going in the future.

Mike Berkenbile stated his appreciation for everyone that presented to the committee that day. He encouraged the committee members to share that information with their constituencies and bring back their perspectives.

Open Forum

Tom Sicilia explained that open forum was a space to talk about anything the committee wanted to discuss, and were there a need, to create Issue Manager (IM) teams where items might need more investigation.

Starting off, Tom Sicilia noted that he had not seen the annual groundwater monitoring report yet. Sarah Springer explained that it was in process and comments were being worked on. It was expected to be published by the end of November.

Chris Sutton recalled a time when the Site was forbidden from using computer models and his previous work with a contractor trying to persuade DOE to allow the use of models and ultimate approval. He contrasted that the present time, where models were expected to be used as part of regulatory decision making.

Vince Panesko thought it would be nice to have a single document that examined dose and hazard to the public, were Hanford left alone from that point versus the dose and hazard following cleanup. He thought that would be helpful in showing the big picture and how the cleanup plans would reduce the impact to the public over time. Tom Sicilia agreed that would be interesting to read but expected that would require a lot of decisions to be made before that could be developed.

Jan Catrell, Washington League of Women Voters, directed a question to Miya Burke, stating that she was glad that Miya was becoming very involved in HAB activities and was interested in how the HAB related to her position with Hanford Challenge. Tom Sicilia noted that fit in with his Teams introduction idea. Miya explained that she was a program manager for Hanford Challenge, which involved a lot of

education and outreach, such as presenting in schools and creating educational materials with the goal of being informational and fun. As another example, she was organizing a “scholar series” of talks about Hanford. She tried to find new ways of introducing the topic of Hanford. The HAB helped her job in that it helped her learn more about Hanford that she could take back to the public in plain language, smaller-sized ways that could help get people engaged.

Shelley Cimon considered the opportunity for drilling in the perched lakes and getting those incorporated into the pump and treat system. Tom Sicilia suggested that could be a future agenda item.

Rob Davis felt it was important to understand the isotopes that were held in the soil that did not reach groundwater and if those could be expected to remain in the soil through their attenuation periods. He hoped that the data could be compiled for a better understanding.

Tom Sicilia explained a highway metaphor he liked to use in relation to groundwater. He likened the vadose zone to an onramp, where contaminants moved and merged at different speeds. He noted that Rob’s concern would be difficult to discuss without “going into the weeds.” Chris noted that there were some relevant items in the Administrative Record to address those concerns, which he had posted to the RAP’s Microsoft Teams channel. Tom Sicilia considered the idea of “vadose zone transport 101” as a future agenda item.

Jacob Reynolds, Non-Management, Non-Union Employees, considered why he might be concerned about soil-bound contaminants from a policy perspective and as a representative of Hanford Site employees. He stated that he heard frequent concern from the workforce, but not the HAB, around contaminants in the soil. Something like cesium, which was not mobile, was a known concern because it would stay where it was spilled. He thought there was a tendency to ignore cesium in favor of mobile contaminants, however, those contaminants were relatively harmless when compared to cesium. He stated that workers were consistently asked to expose themselves to cesium to address concerns that were not even of the same magnitude in level of concern. He hoped that the HAB would consider that perspective as a potential policy concern. He thought was a question of who was being prioritized and that the exposure concern was rarely presented to the public.

In response, Tom Sicilia noted that an overarching tenant of the Board was that worker safety was paramount above all else. He considered that the concern could serve as a joint topic with the Health, Safety, and Environmental Protection Committee (HSEP) or Committee of the Whole (COTW). It was a question of risk now versus risk later.

Committee Business

March Elections

Tom Sicilia stated that, in March, elections would be held for committee chair and vice chair. The term was one year. He asked that those interested in running or interested in learning what the positions consisted of contact him. He also asked that members make nominations, should they believe someone else might be interested or suited to the position.

Ruth Nicholson clarified that, should anyone be nominated, the facilitation staff would confirm willingness to serve.

Rose Ferri asked if Tom Sicilia would be serving up to March. He confirmed that it was typical for a committee chair to serve up to the meeting after that election. There would be a transition period.

Next Meeting

Tom Sicilia noted that the next RAP meeting was planned for March of 2023. The committee leadership election and the 324 Building topic were expected to occupy about half of the meeting. He invited additional input.

Chris Sutton noted that there were several projects in various stages of deactivation, decommissioning, decontamination, or demolition (D4). In relation to the canyons, he hoped to see an overview of the plans for the various above-ground structures. Another topic he considered, potentially for future meetings, was PFAS and what DOE and the regulators were considering around that topic. Finally, he noted that the 618-11 site was directly above one of the plumes. Tom Sicilia thought that it might be worth getting an update on many of the items that were not time critical.

Pam Larsen felt there should be an update on the Waste Encapsulation and Storage Facility (WESF) in every RAP meeting, considering meeting infrequency.

Ruth asked if DOE was planning anything for that meeting. Gary Younger, DOE, stated that WESF was on the docket for June, and March would be primarily 324 Building-related for DOE. Roberto Armijo, EPA, stated that there was nothing to report and was waiting on the groundwater report. Ryan Miller, Ecology, offered to check in with Ecology staff for potential items of interest.

Tom Sicilia noted that in March the committee would also need to provide input to the HAB's fiscal year 2024 work plan.

Other Topics

Tom Sicilia invited additional ideas or questions.

Jan Catrell noted that she was pleased to have received presentations on topics that had been requested for a long time. She felt there was a lot of content worth exploring within those presentations and felt that the educational experience was enhanced by having the presenters and participants in the same room, rather than online.

Ryan noted that he discussed bringing the Site-Wide Permit (Rev.9) to the Public Involvement and Communications Committee (PIC) previously. Ecology was expecting public comment to start in January of 2024.

Pam noted that the Board spent a lot of effort crafting advice and input on that topic (HAB Advice #262). She was interested in seeing how the HAB's advice influenced the result.

Chris was interested in learning about the baseline risk assessment and how that influenced the cleanup process. He felt that learning about the risks defined for the workers, public, and environment would be related to the topic Jacob Reynolds discussed as well. Tom Sicilia agreed that a topic like that would be helpful as a 101 topic. He hoped to see a balance of topics that allowed the committee to produce informed advice and understand the "nuts and bolts" around decision making.

Meeting Recording

https://youtu.be/_EnHwsbD9D8

Attachments

[Attachment 1: Deputy Designated Federal Officer Slide](#)

[Attachment 2: Meeting Agenda](#)

[Attachment 3: Draft April RAP Meeting Minutes](#)

[Attachment 4: November RAP Sheet](#)

[Attachment 5: DOE Presentation: 200-ZP-1 Groundwater Operable Unit Optimization Study](#)

[Attachment 6: DOE Presentation: Cumulative Impact Evaluation Overview and Update](#)

[Attachment 7: Draft Fiscal Year 2023 Draft Work Plan](#)

[Attachment 8: HAB Issue Manager Team List](#)

Attendees

Board Members and Alternates:

Chris Sutton, Primary*	Jacob Reynolds, Primary*	Jan Catrell, Primary*
Jessica Black, Primary	Larry Halder, Primary	Miya Burke, Primary*
Rob Davis, Primary*	Steve Anderson, Primary	Susan Coleman, Primary*
Tom Galioto, Primary	Dan Solitz, Alternate	Mason Murphy, Alternate
Pam Larsen, Alternate*	Rose Ferri, Alternate	Simone Anter, Alternate
Tom Sicilia, Alternate*		

Others:

Doug Hildebrand, DOE*	Alicia Boyd, Ecology	Dieter Bohrmann, CPCCo
Gary Younger, DOE*	Ginger Wireman, Ecology	Sarah Springer, CPCCo*
Jason Capron, DOE*	John Price, Ecology	Dana Cowley, HMIS
Kate Amrhein, DOE*	Nina Menard, Ecology	Debra Yergen, HMIS
Michael Cline, DOE	Ryan Miller, Ecology*	Trevor Budger, Intera*
Mike Berkenbile, DOE*	Theresa Howell, Ecology	Derek Miceli, WRPS
	Will DeLuna, Ecology	Gerry Pollet, Heart of America Northwest
	Craig Cameron, EPA	Li Wang, Yakama Nation
	Geoff Schramm, EPA*	Liz Mattson, Hanford Challenge
	Roberto Armijo, EPA*	Matt Hendrickson, Oregon Department of Energy
	Tom Rogers, WADOH*	Shelley Cimon, Columbia Riverkeeper
		Thomas Brouns, PNNL
		Jessica

		Vince Panesko
		Josh Patnaude, Facilitation*
		Lacey Mansius, Facilitation*
		Ruth Nicholson, Facilitation*

**Indicates that the individual was signed in or otherwise noted as an in-person attendant*

Note: Participants for this virtual meeting were asked to sign in with their name and affiliation in the chat box of Microsoft Teams. Not all attendees shared this information. The attendance list reflects what information was collected at the meeting.